

### REMARKS

By the *Office Action* of 6 May 2004, Paper No. 16, Claims 1-19 and 36-51 are pending in the Application, all the pending Claims being rejected. By the present *Response and Amendment*, the Applicant amends Claims 7-9, 13, 19, 36, 41, 45 and 48, and leaves unchanged the remaining pending Claims. No new matter is believed introduced by the present *Response and Amendment*. It is respectfully submitted that the present Application is in condition for allowance for the following reasons.

#### **1. Prosecution History**

The Applicant respectfully submits that the present Claims are novel and non-obvious over the cited art. The prosecution of this case has followed a fairly similar path of consistently cited references being raised in each *Office Action*, with the addition of a new reference in subsequent *Office Actions* purporting to overcome the Applicant's argument of patentability in previous *Responses*. While this procedure is no doubt common in prosecutions, this particular history has been tortured.

In *Office Action*, Paper No. 5, dated 8 October 2002, the Examiner rejected Claims 1-19 under 35 U.S.C. § 103(a) as being unpatentable over Mathieu (0000738) in view of Dinkel (3284980). In a *Response*, the Applicant showed that neither of these cited references disclosed, taught or suggested "a construction element having *an impervious membrane on the lower principal surface of the core*."

In fact, Mathieu embodies the very essence of the prior art that the present application attempts to improve upon. Mathieu discloses *manufacturing* a construction element with a membrane covering the conveyor so the conveyor doesn't get soiled, but it does not disclose a construction element *itself* having the impervious membrane as recited in the Claims of the present invention. The membrane 2 of Mathieu is nothing more than a carrier for the conveyor, described as a deficiency in the prior art regarding another patent:

U.S. Reissue Patent No. Re32,037 to Clear is a method for manufacturing cementitious reinforced panels and illustrates a concrete panel 11 having reinforcement layers 12, 13 and a polyethylene layer 20 adjacent one of the layers 12, 13. Layers 12 and 13 are described as mesh reinforcing elements, preferably constituting fiber mesh like pervious webs, each entrained in hydraulic cement. Layer 20 is a carrier sheet placed under reinforcing element 12 during manufacture. Yet, such methods of constructing backerboards are not only deficient because they produce an inferior wet-

area panel, but also because they require the use of a carrier sheet.  
*Specification, Page 2, Lines 6-13.*

Similarly, while membrane 2 appears in many of the Figs. of Mathieu, Mathieu discloses that the membrane 2 is *not* part of the final construction element or panel, but (just like Clear), this membrane 2 is only a temporary film membrane that protects the cementitious lower surface of the panel from the conveyor belt or support structure during the manufacturing process. This temporary film membrane is typically referred to in the art as a carrier sheet or carrier web. Yet, it is an object of the present invention to rid this requirement of the prior art use of a carrier web:

The present method of constructing the backerboard dispenses with the prior art requirement of a carrier sheet or web. *Specification, Page 3, Lines 6-7.*

In the next *Office Action*, Paper No. 8, dated 23 June 2003, which was made *Final*, the Examiner again rejected all the Claims under 35 U.S.C. § 103(a) as being unpatentable over Mathieu (0000738) in view of Dinkel (3284980). Although Applicant had shown that this rejection was in error, the Examiner nonetheless maintained the rejection.

In a *Response*, the Applicant amended the Claims to add what was an inherent limitation - that a "construction element", to be useful at all, is only a construction element "*after its manufacturing*", as if this somehow differentiated the Claims from Mathieu (that disclosed the manufacture of an construction element that lay atop a membrane during its manufacture, but did not of course have the membrane upon exiting the manufacturing process, and its eventual use as a construction element).

A further amendment to the Claims, again made what was inherent, expressed, as the claimed construction element had an impervious membrane on the lower principal surface of the core, wherein *the impervious membrane remained on the lower principal surface of the core after the manufacture of the construction element*. But a claimed "construction element" that had an impervious membrane clearly meant that the impervious membrane was a part of the element when it could actually be "used" as a construction element, not the few seconds the element was being manufactured at some plant distant from where the a panel would actually be used.

The essence of the argument was identical to the first *Response*, that neither Mathieu nor Dinkel taught or suggested a construction element having *an impervious membrane on the lower principal surface of the core*. That the Claims were amended to make expressed what

was inherent, (that the membrane be on the panel after its construction), simply did not change the fact that the cited references could not defeat the patentability of the Claims.

In a 25 August 2003 *Advisory Action*, the Examiner surprisingly refused to enter the above amendments, suggesting that amending the Claims of a panel itself to include language that the construction panel embody a specific form *after* its manufacture, instead of *during* its brief manufacture, required an RCE for examination, as this was somehow a limitation that required a new search. Although this conclusion was erroneous, the Applicant nonetheless complied with such a filing.

In the next *Office Action*, Paper No. 13, dated 13 November 2003, the Examiner again rejected all the Claims under 35 U.S.C. § 103(a) as being unpatentable over Mathieu (0000738) in view of Dinkel (3284980), but now including a third, completely unrelated reference, US Patent No. 3,672,951 to Moore et al. Moore et al. disclosed a site-built roofing structure, built layer-upon-layer at the construction zone.

In a *Response*, the Applicant showed that Moore et al. was not combinable with the other references, as Moore et al. in fact taught away from the teachings of the other references, and from the present invention, and was non-analogous art.

Moore et al. was not within the scope of concrete panels or related backerboards. The subject matter of the present invention, Dinkel, and Mathieu is prefabricated concrete backerboards or panels used as a substrate on floors, walls, and ceilings for setting various tile like materials. Moore et al. pertains only to a built-up roof structure fabricated at the construction site.

It was simply unreasonable to assume one having ordinary skill in manufacturing or installing concrete backerboards would also be skilled in the profession of installing built-up roof structures.

Yet, the Claims were amended again with another inherent limitation, that being the inventive panels were *prefabricated* - delivered to the site ready for installation without further touch up:

It is evident from the prior art that an improved backerboard and method of constructing such an improved backerboard is needed. It can be seen that there is a need for a backerboard having at least one waterproof surface that can be delivered *ready-made to the construction site*, and a method for producing such a backerboard without resort to a corner sheet. *Specification, Page 2, Lines 14-17. (emphasis added).*

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The present backerboard construction *eliminates the prior art necessity of the on-the-construction-site application of a moisture barrier behind the backerboard*. It exhibits all of the structural, bonding and workability properties of conventional backerboards, and provides advanced water resistance. *Specification, Page 3, Lines 2-5.* (emphasis added).

In response, the present Office Action issued.

## 2. Claims Rejections under 35 U.S.C. § 103

The familiar references Mathieu and Dinkel are once again cited, but now the Examiner cites US Patent No. 6,171,680 to Fahmy in yet another attempt to discredit the patentability of the present Claims. Claims 1-19 and 36-51 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of these references. The Applicant respectfully traverses this ground of rejection too.

The Examiner suggests that Fahmy, in combination with the other references, now obviates the present invention, specifically the aspect that the impervious polymer membrane remains on the lower principal surface after the manufacture of the element to act as a water vapor barrier.

Fahmy is distinguishable from the present claimed invention in numerous ways, among them:

- Fahmy teaches only the use of a liquid resin applied to the sheathing to become the "impervious membrane", although the present invention cannot utilize liquid-applied impervious membranes;
- Ultimately, the Fahmy "impervious membrane" comprises at least *three* separate layers of materials bonded to the core, wherein the present inventions impervious membrane can be a single layer;
- Fahmy requires an impervious membrane on both principal surfaces of the sheathing, while the present invention can have only one.

Not only is Fahmy distinguishable from the present invention, but in this latest *Office Action*, the Examiner has again digressed from limiting the subject matter to common construction elements, to including other types of construction elements as a basis for obviousness rejection. The subject matter of the present Claims, *as expressly recited*, Dinkel (for example, Col 2, Lines 14-29), and Mathieu (for example, ¶¶ 0001 and 0009), all pertain to

*prefabricated concrete backer boards* or panels used as a substrate on floors, walls, and ceilings for setting various tile like materials.

Fahmy, like Moore et al. before it, simply is not combinable with the other references, as Fahmy is simply non-analogous art, with no insight to the problem the Applicant solves with the presently claimed invention. Fahmy (for example, Col 1, Lines 7-15) pertains to a *paperboard* composite sheathing. Since there are literally hundreds of different types of sheathing materials, it is surely unreasonable to assume one having ordinary skill in manufacturing *concrete* backer boards would also be skilled in the profession of manufacturing sheathing materials. It is impossible to be skilled in every one of the vast number of disciplines or trades included in the construction industry.

The present invention is distinct from the teachings of Fahmy in a number of areas. For example, the present invention, as recited in the Claims, is a construction element for use after its manufacture as a baker board substrate. Fahmy is simply a paperboard sheathing. Due to their low strength, because they lack reinforcement layers and a high compressive strength cementitious core, paperboard sheathing materials can not be used as a substrate to support heavy tile materials and the like (what concrete backerboards are used for), which is understood by those of skill in the construction art. Also, when exposed to moisture change, Fahmy's unstable paperboard core would expand and contract on the magnitude of five to ten times that of the tile like materials bonded to the paperboard sheathing, which would cause the tile like materials to shear away from the sheathing in just a few wet/dry cycles. On the other hand, when exposed to moisture change, concrete bakerboards, with their stable cementitious core, expand and contract at a rate very close to that of the tile like materials, making these backerboards historically superior substrates for tile materials and the like.

Further, the present invention, as recited in the Claims, is a cement core 22, with one or more reinforcement layers 34 and 28, bonded to the major surfaces. Fahmy neither teaches nor suggests a cement core, or a reinforcement layer, and to alter the teachings of Fahmy to include the cement core and/or reinforcement layers of Dinkel and Mathieu would change the very essence of the paperboard sheathing of Fahmy. Thus, these three references simply cannot be combined as suggested by the Examiner.

### 3. **The Fahmy Membrane vs. The Present Invention's Membrane**

The Examiner uses the presence of a layer of permeable resin 22 on the surface of core 20 disclosed in Fahmy as the reason for rejection of the present Claims. Yet, the permeable layer of Fahmy is significantly different than the impervious membrane of the present invention.

The Examiner mistakenly refers to the layer of paperboard 22 as the "core", when actually the center layer of paperboard 12 is the core. Fahmy states:

*The composite sheathing material 10 comprises a **core layer 12**, a first layer of paperboard 14 having a first layer of a permeable resin 16 on the surface thereof, said first layer of paperboard 14 being adhered to the core layer of paperboard 12 by means of a first adhesive layer 18 therebetween, and a **second layer of paperboard 20 having a second layer of a permeable resin 22 on the surface thereof, said second layer of paperboard 20 being adhered to the core layer of paperboard 12 by means of a second adhesive layer 24 therebetween.** Col. 2, Lines 11-20. (emphasis added).*

Further, Fahmy teaches that to construct the membrane with liquid water impermeability and water vapor permeability requires *three* separate layers of materials bonded to the core 12. These materials include a permeable resin (16 or 22), a paperboard layer (14 or 20), and an adhesive layer (18 or 24) with a plurality of apertures 26. The paperboard layer (14 or 20) must be used to separate the resin layer (16 or 22) from the special adhesive layer (18 or 24) with a plurality of apertures. If the paperboard layer (14 or 20) is not used, then the resin (16 or 22) would fill in the apertures 26 in the adhesive layer (18 or 24), thus rendering the membrane vapor impermeable.

On the other hand, a preferred embodiment of the present invention has only one layer of web material to create the impervious membrane, as presented in amended Claims 9, 13, 19, 36 and 45. This aspect of the amended Claims is fully supported by the application as originally filed, both in the *Specification* and figures.

Further, Fahmy teaches that two layers of impervious membranes (16, 14, 18) and (22, 20, 24) must be used, one on each side of the core 12, in order to construct a composite sheathing with liquid water impermeability and water vapor permeability. The present invention as recited in amended Claims 7, 13 and 41 limits the construction element to only one impervious membrane. This aspect of the amended Claims is fully supported by the application as originally filed, both in the *Specification* and figures.

Additionally, Fahmy only teaches that in order to adhere the outer layers of paperboard to the core while allowing the composite to remain vapor permeable, a layer of adhesive with a

plurality of apertures must be printed on the outer layers of paperboard with a special engraved transfer roll:

*A critical aspect of the present invention is the fact that the first and second adhesive layers, when assembled into the finished composite sheathing material, contain a plurality of apertures 26 therethrough.* This is the primary structural feature that contributes to the high permeability of the finished composite sheathing material. Thus, while liquid water is prevented from passing through the composite sheathing material due to resin layers 16 and 22, water vapor nevertheless is able to pass through the permeable resin layers 16 and 22 and through the apertures 26 of the first and second adhesive layers 18 and 24. The apertures are formed during the composite manufacturing and assembly process, as explained hereinafter. Col. 3, Lines 7-20. (emphasis added)

The present invention does not require this special adhesive with apertures, thus illuminating the need for a special engraved transfer roll in the manufacturing process. As a matter of fact, the present invention requires no adhesive at all due to the adhesive nature of the plastic cementitious core material which is cast onto the impervious membrane during manufacturing. After the core cures, the impervious membrane remains adhered to the core. Thus, Fahmy teaches away from the invention by requiring this critical need for an adhesive layer with apertures therethrough.

Further, yet, Fahmy states:

The first and second layers of permeable resin may be applied to the first and second layers of paperboard 14 and 20, respectively, by any conventional coating technique such as, for example, by extrusion coating. Col 2, Lines 42-45.

It can be appreciated by those of skill in the art that this indicates that these liquid resin coatings must first be applied to a web before adhering to the core. Yet, the impervious membrane of the present invention is not, and indeed cannot, be a layer of liquid resin on its lower surface. This would cause the liquid resin to adhere to the conveyor belt or form on which the baker board is manufactured.

The present invention is a "method of constructing the backer board dispenses with the prior art requirement of a carrier sheet or web." *Specification, Page 3, Line 6.* Thus, the benefit of manufacturing the present backer board without a carrier sheet or web would be lost if a liquid resin vapor barrier were used as an impervious membrane on my invention.

The non-liquid applied membrane, as embodied in amended Claims 8, 14, 45 and 48 is fully supported by the application as originally filed, both in the *Specification* and figures.

The pending Claims are novel and non-obvious over the combination of art, assuming the art is so combinable. Applicant maintains that as altering any of the cited references to make them combinable as the Examiner has proposed would render them unsatisfactory for their intended purpose and change the principal of operation of them, as discussed above, it is respectfully submitted the present invention is patentable.

#### 4. Fees

No Claim fees are believed due. The number of Claims pending remains unchanged.

No extension of time fees are believed due. This *Response and Amendment* is being filed within six months of the *Office Action*, and more specifically within three months.

Nonetheless, should any fees be due, authorization to charge deposit account No. 20-1507 is hereby given.

#### CONCLUSION

By the present *Response and Amendment*, the Application has been in placed in full condition for allowance. Accordingly, Applicant respectfully requests early and favorable action. Should the Examiner have any further questions or reservations, the Examiner is invited to telephone the undersigned Attorney at 404.885.2773.

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Pamela G. Mashburn

Name of Applicant, Assignee, or

Registered Representative

Pamela G. Mashburn

Signature

20 July 2004

Date

Respectfully submitted,



Ryan Schneider

Registration No. 45,083

Troutman Sanders LLP  
Bank of America Plaza  
600 Peachtree Street, N.E., Suite 5200  
Atlanta, Georgia 30308-2216  
United States  
Phone: 404.885.2773  
Fax: 404.962.6849